

APRIL

NO.13

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# TS Horizons

## TEXT EDITOR 2000

*A BASIC Word Processor for the 2068*

*by Chris Nystrom*

**TS 2068**

*User Defined Graphics*

*S·E·T·Y·P·E*

*Machine Code*

*Graphics Loop*

**TS 1000**

*Simulating READ-DATA*

*WORM Enhancements*

*Compudex*

*Phone Dialer*

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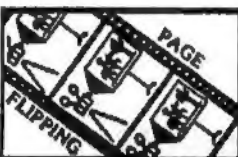
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#1 Nov'83 Creating/Saving Files (Johnson), Repeat Key and Uninterruptible Power Supply Projects, Numerical Analysis, Load/Save Problems, Reviews, and more!



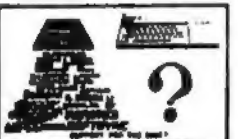
#2 Dec'83 Matrix/Cursor Input (Johnson), User-Friendliness, Reset Switch Project, Memory Reduction, Rule of 78, IX Cash Register, Graphics Tutorial, etc!



#3 Jan/Feb'84 Two Animation Programs, Simple Loading Aid Proj. (Young), Tape File Protection, Differential Equations, Ham Radio Reviews, User Group News & More!



#4 March '84 The Death of TCC, TS1000 Bank Switching (Hunter), Error Recovery (Johnson), Edge Connector Schem., Simpson Rule, Reviews, Reader Input, & more!



#5 April/May'84 "WORM" Word Processor (Young) Pt.1, Least Squares, TS1000 Graphics Program, TS2068 Future?, Bank Switching Pt. 2, Program Tips, Reviews, and more!

BACK ISSUES



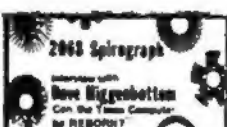
#6 June'84 TS1000 As Church Aid, Interfacing Books, Num. Analysis, Hardware Tips, "WORM"-2, Switching-3, Good News from EA Brown, Six Reviews, and more!



#7 July/Aug'84, Telecommunications Issue, 2068 Program Tips, How A Compiler Works, Rotating Globe, Byte-Back Modem, TC for Beginner, Switching-4, WORM-3, S.I.N., etc.



#8 Sept'84 TS 1000 Music Program, 2068 Plotter, 2068 Character Set (Young), Address Program, Nine Reviews, Telecommunications Column, TS News, and more!



#9 Oct/Nov '84 - ANNIVERSARY ISSUE, TS 2068 Spirograph, Dave Higgenbottom interview, FORTH for T/S Computers, Spectrum section, Bank Switching-5, Telecommunications, Reviews, etc.



#10 Dec '84 - 40 PAGES, Making Backups of 2068 Software, Banner Programs, QL, TS1000 Program Tips, Christmas program, RS100vs.TS1000, MTermII/Horizon Awards, Switching-6, TSUGs, New Column, more!

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# ENTER

The magazine publishing business can be pretty rough. For instance when you're about two weeks late and you still don't have everything you need to finish your layouts it can be discouraging. Well yesterday we received a couple of items in the mail that cheered us up somewhat, as odd as it may sound. It is early April as this is being written and we just received a copy of Computer Trader Magazine, with a March/April cover date, and the March issue of S.U.M. As far as we know CTM has never had a combined-month issue. We're not glad they are running late and we certainly don't wish them bad luck; far from it. But it is nice to know that we're not the only ones.

## TWO-FOR-ONE SUBSCRIPTION SPECIAL

In fact Chet Lambert (publisher of Computer Trader Magazine) is becoming a good friend. He came up with the idea of a 2-for-1 subscription special with TS Horizons. Both CTM and TSH are \$15 for 12 issues (ostensibly one year). CTM usually features from 6 to 10 articles on Timex-Sinclair-related topics with the rest of its 100 or so pages devoted to Apple, Commodore, Kaypro and Radio Shack computers and Ham Radio. (See magazine review TSH #8, p. 25)

Here's the deal: you send \$25 to one or the other of us, we split it down the middle, you get a one-year subscription to both magazines, and save \$5. This applies to new subscribers and renewals and is for a limited time only (approximately 3 months). Tell your friends. We and Chet kind of see it as a contest to see who can get the most subscriptions for the other guy.

## DAVID HIGGENBOTTOM

Now that we've got the pleasantries out of the way, let's get down to the nitty gritty. Dave Higgenbottom has been the target of some sharply critical editorials of late. One in particular was critical of TSH for being "overoptimistic" about Dave's chances for success (in reviving the Timex computer line), especially for an announcement we printed in December saying that success appeared imminent. This particular publication went to the trouble of contacting Timex, and announced that Timex had said they had made no firm commitments. What we don't understand is why this publication did not contact TS Horizons (they have our number) or Mr. Higgenbottom (whose number has been published in TSH). The writer should know that Timex is not likely to verify anything until the money is on the table and the papers are signed.

The announcement in the December 84 issue said that it appeared that a "very substantial investment" had been secured. And since money is the name of the game and the language that Timex wants to talk, we were very excited and made that last-minute announcement. Unfortunately the original investor reneged and Dave was forced to seek other backers. This is not a small task; were talking millions of dollars here!

Well it now appears that Dave has found another big investor and he is expected to close a deal soon (next week.) What should we do now? Wait until the computers are on the shelves before we pass on our information to our readers? No, we will continue to convey information as we receive it. We don't consider this to be rumor-mongering.

Finally, even if Dave does get the financing he needs, I don't envy him having to negotiate with Timex. Dave is trying to do something unprecedented. His phone bill alone for 1984 exceeds my annual salary. We fear that if Dave is unable to pull it off he will be remembered by many as the man who failed to bring back the Timex computer, rather than the only person who tried to save a fine product and its users despite early prophecies of failure and criticism from those who should have supported him. But if he makes it: remember, you heard it here first!

## The SILVER AVENGER is coming? From Portugal?

No, don't go scrambling off in search of your old DC's and Marvels; the Silver Avenger is not a comic book. It is a "Portuguese version" of the TS2068. Actually Silver Avenger is a name the British press gave it (they'd never seen a silver computer, I guess). Timex of Portugal just calls it the TC2068. (TC for Timex Computer).

The information below is provided by Bob Dyl of the English Micro Connection (15 Kilburn Court, Newport, RI 02480, 401/849-3805). Bob wants to stress that this is PRELIMINARY information ONLY, based on what he has been told by Timex of Portugal. Over the course of the next month he will be examining these Portuguese products in attempt to verify this information. The results will be printed in TS Horizons, possibly the next issue. So remember the information below has yet to be verified by Bob Dyl's company.

Timex of Portugal is very interested in entering the U.S. and European markets with at least two products. Bob Dyl hopes to distribute the products in the U.S. if they meet his standards. They are currently awaiting FCC approval.



1) Timex 2068 computer. Outwardly the computer looks exactly like an American 2068. Inside, the computer is said to be a cross between the British Spectrum and the TS2068. The rear edge connector is configured for Spectrum peripherals, but the computer runs 2068 software. A cartridge is included with the computer, which plugs into the Timex cartridge port. With this cartridge, the computer runs Spectrum software. However the cartridge is not compatible with the American TS2068. Bob will be testing the computer to verify the above and see what percentage of 2068 and Spectrum programs will run on the computer in each configuration. If all goes well, Bob hopes to be able to sell the computer, with Spectrum cartridge, for approximately \$150.

2) Disk Drive system. This system has four parts: a 3" Hitachi disk drive, a controller (16 K RAM on board), an interface (three interfaces should be available: one for Spectrum, one for American 2068 and one for Portuguese 2068), and a power supply. The system can take up to 6 drives. Other sizes of drives may be used instead. Timex of Portugal hopes to have CPM compatibility soon. If all goes well, Bob hopes to sell the disk drives for approximately \$250 for the system (without CPM).

There's always something new on the Horizon, isn't there?

We hope you enjoy this issue's articles. If it seems a little skimpy on the TS1000 end we apologize and we'll try to make up for it next issue. Unfortunately Bill Ferrebees' articles for this issue were lost in the mail. But he'll return next issue. (I guess I'll have to get a modem. What a predicament? Having to depend on the post office or the phone company.)

Until next time,  
Rick Duncan

### FROM THE CLUTTERED DESK

Reader input plus other notes of interest

By Scott Duncan

Advertising/Circulation Manager

Let me begin this time by congratulating Mr. Harry S. Wake of San Diego, California. He is our 1500th subscriber.

It doesn't look like we will have 2,068 subscriptions by our targeted date of April first but we are awfully close. I hope to reveal who that will be in the next issue.

By the way, my thanks to Mr. T.S. Subscriber for filling in for me in issue #12.

Some useful information was given to me by Arthur D. Brady of New York. According to Arthur a full line of Spectrum books can be purchased from Computer Book Shops LTD, 30 Lincoln Road, Olton, Birmingham B 27 6PA England.

Send international reply coupons for a catalog sent via airmail. Sounds like a pretty good deal considering the exchange rate of the pound.

Having just recovered from answering a ton of mail received because of a recent mention in U.S.A. Today, we now find that radio station WOR in New York has given us a favorable mention on the air. Let us say thanks and also that any free advertising of TS Horizons is welcome and appreciated.

### TS 1000/ZX81 ADVOCATE

I do not know when my subscription expires - I came in by way of TS-User. But I don't want to miss any issues so here's my renewal.

Please don't desert the 1000/81. Not all of us could afford 2068's. I've never even seen one.

Have you seen Software Farm's Forty-Niner? For two months that one game has been load continually on our Timex. It has been played every day by teens and adults. Best of all I have the highest score - for once I did better than the kids. We've found it totally addicting. Luckily we own 3 1000's!

M. L. Wallace, Libby, MT

Anyone who is a subscriber can tell when their TS Horizons subscription runs out (even if you came in via our agreement with TS User) by looking at the two numbers printed in the top right side of your mailing label. The first number indicates the first issue of your subscription and the number after the dash is the last issue.

We've heard a lot of great things about Forty-Niner and Software Farm in England, but haven't seen the program yet.

### ADVERTISER'S DREAM

I thoroughly enjoy your publication and wait impatiently for it each "month". Although I never thought I would admit it, the first thing I read is the advertising to look for new hardware and software. I follow that with T-S NEWS.

5 I am particularly interested in hardware

projects and while I haven't started my bank switched memory yet, I plan to "Real Soon Now".

Sincerely, Harold Crandall, Oxford, CT

Harold, we hear from lots of people who appreciate the amount of new product information TS Horizons provides via ads, TS News, and reviews. We feel that this is one of the most important types of information we can provide. All we ask is that when you do order products or even ask for more information on a product, please mention that you heard about them in TS Horizons.

#### INTO THE 21st CENTURY

Sir, I want to compliment you on your excellent magazine. I received my order of the first three issues (back issues) and issue #11. Issue #11 is the first of my full subscription. As the owner of a ZX81 and a 2068 I cannot express my thanks enough for your courage and spirit in publishing a magazine devoted to T/S computers. We'll stick with you down here in the backwood of Alabama as long as you continue to publish. Please find enclosed my order and payment for the back issues I need to bring my set up to date. Here's hoping to be reading you into the 21st century.

J.E. Prickett, Huntsville, Alabama

And here's hoping to have plenty of loyal readers like you until then.

#### TWO T-S HORIZONS BELIEVERS

Dear Mr. Duncan,

Let me first say that I have enjoyed and learned from every issue that I've received. I was surprised to find issue #11 in my mailbox since my trail subscription was for issues 5-10. I believe in your promise to keep publishing so please find enclosed my renewal for a 1-year subscription beginning with issue #11. Thank you.

Mark Farmer, Jeffersonville, Ind

Today I received my first copy of TS Horizons. Enclosed find a check for back issues. I also subscribe to Syntax and Syncware News. I believe I absorbed more information from your first issue than all the others combined. Honestly! I am a beginner (last 18 months) and have been lost. It is O.K. to have advanced programs but I hope you keep including information for the beginner.

Thank you, Donald Smith, Owosso, MI

Keep those letters coming and don't forget about your T-S Machines as the weather is warming and you find yourself out of the house more. Remember how much fun old faithful was all winter? TSH

## **GREAT GAME and GRAPHICS SHOW**

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As I promised last month, here is the listing for the UDG program. Since it is a rather long program, I won't explain its operation in detail. However, here are a few things you should know about the program.

The UDG's are saved as 168 bytes of machine code. To use the UDG code in a program, type in as the last line of the program that USES the UDG's;

9999 MERGE "UDG" CODE 65368, 168

Save the original program to tape using;

SAVE "program name" LINE 9999

Then load and run the UDG program and when prompted, save the UDG code to tape right after the original program.

The UDG information is POKEd directly into memory. The POKE-DATA routine converts the binary codes into decimal. (You might be able to use the code in another program.)

You must take the "next" option BEFORE the "stop" option to save the UDG's. If you don't, the last UDG will be lost.

```

10 REM UDG
20 REM by John Bell
30 DIM A(8,8)
40 LET LOCATION=65367
50 POKE 23658,8
60 CLS
70 GO SUB 200
80 GO SUB 400
90 GO SUB 600
100 STOP
200 REM DRAW GRID
210 INK 5
220 FOR A=95 TO 159 STEP 8
230 PLOT 95,A: DRAW 84,0
240 PLOT A,159: DRAW 0,-84
250 NEXT A
260 INK 0
270 RETURN
400 REM PRINT UDG
410 INK 4
420 FOR A=1 TO 8
430 FOR B=1 TO 8
440 PRINT AT 1,B+11;B
450 PRINT AT B+1,11;CHR$(B+64)
460 NEXT B
470 NEXT A
480 INK 0
490 PRINT AT 15,0;"input row le
500 PRINT AT 16,6;"COLUMN NUMBE
510 PRINT AT 17,6;"B for black
520 PRINT AT 18,9;"OR"
530 PRINT AT 19,6;"N to define
540 PRINT AT 20,6;"S to stop"
550 RETURN
600 REM INPUT BITS
610 INPUT B$
620 IF B$="S" THEN GO TO 1000
630 IF B$="N" THEN GO TO 600
640 IF B$(3)="B" THEN LET COLOR
=143

```

```

650 IF B$(3)="W" THEN LET COLOR
=128
660 PRINT AT CODE B$(1)-63,CODE
B$(2)-37;CHR$ COLOR
670 LET A(CODE B$(1)-64,VAL B$(
2))=COLOR
680 GO TO 600
800 REM POKE DATA
810 FOR A=1 TO 8
820 LET LOCATION=LOCATION+1
830 LET DECIMAL=0
840 LET BINARY=128
850 FOR B=1 TO 8
860 IF A(A;B)=143 THEN LET DECI
MAL=DECIMAL+BINARY
870 LET BINARY=BINARY/2
880 LET A(A,B)=0
890 NEXT B
900 POKE LOCATION,DECIMAL
910 NEXT A
920 GO TO 60
1000 REM END PROGRAM
1010 CLS
1020 FLASH 1
1030 PRINT "START RECORDER"
1040 SAVE "UDG"CODE 65368,168
1050 FLASH 0
1060 CLS
1070 INPUT "SAVE AGAIN? Y/N "C$
1080 IF C$="Y" THEN GO TO 1030
1090 CLS
1100 PRINT "PROGRAM COMPLETE"

```

\* LINECHECK program (See TSH #12, p. 10)

I hope this program makes your 2068 computing easier. Coming next month, a project for the 1000 AND 2068; Build your own (inexpensive) voltage surge supressor.

TSH

## Introducing ASR 2068

ASR 2068 is an address file program for the Timex Sinclair 2068 computer and 2040 printer. The program has a capacity of 275 names, address and phone numbers. After an address is entered, it can be recalled in two ways, either by flipping through the file on screen or by searching by the last name, city or state. After the file is complete, all addresses contained, can be sorted alphabetically.

The price of ASR 2068 is \$12, which can be paid by check or money order.

ASR for the TS 1000 is still available, as seen in issue 8 of TS Horizons, for the price of \$5.

SEND TO: John Marion  
HC 63 box 650  
Greenup, KY 41144

# try these

The dear, departed magazine for Timex computers, Sync, ran a regular feature called "Try This" which featured "short programs to show off your computer, impress your family and friends, and tickle your imagination." Now to continue this tradition TSH proudly presents "Try These." This month we've used contributed programs plus some others shamelessly lifted from other magazines and newsletters.

However from now on we hope to use your submissions almost exclusively. Send yours to "Try These", TS Horizons, 2022 Summit Street, Portsmouth, Ohio 45662.

TS1000/1500/ZX81 16K

This program was submitted by Robert Harting, a former writer for Sync. Bob says use SLOW mode.

```

100 PRINT AT 9,3;" "
110 PRINT AT 10,3;" "
120 PRINT AT 11,3;" "
130 PRINT AT 12,3;" "
140 PRINT AT 13,3;" "
150 LET L=USR 16514
160 LET K=RND*128
170 PRINT AT 20,3,"KEY P THEN S  
TO RESTART"
180 IF INKEY$="P" THEN PAUSE 4E
190 IF INKEY$="S" THEN LET K=30
200 POKE 16515,K
210 FOR N=1 TO 100
220 NEXT N
230 GOTO 100
240 SAVE "TSH"
250 GOTO 1

```

Our thanks to Robert Harting, 2416 North  
County Line Road, Huntertown, Indiana 46748.

TS1000/1500/ZX81 16K

The QL is capable of creating and scrolling computer "windows," but the following program called "Window 81" uses the technique on the TSI000. It was written by John Mitchell, of Doncaster, England and printed in the February 1985 issue of Sinclair User, an English magazine.

```

1 PRINT 1+2+3+4+5+6+7+8+9+10+
11+12+13
2 REM WINDOW A=USR 16514
3 REM WINDOW B=USR 16527
4 REM WINDOW C=USR 16544
5 REM WINDOW D=USR 16561
10 POKE 16510,0
15 POKE 16513,234
20 LET A$="2A0C40CDC024021210E2
23940C92A0C4011100019CDC2"

```

```

30 LET A$=A$+"4021110E223940C9
2A0C4011680119C0DC24021210322"
40 LET A$=A$+"3940C92A0C40117B
0119C0DC240211103223940C91121"
50 LET A$=A$+"00ED52060BC519E5
D523D5C1E5D109011000EDB0D1E1"
60 LET A$=A$+"C110EC0610233500
10FB110F00ED52220E40C9"
70 IF LEN A$(>)214 THEN STOP
80 FAST
90 FOR N=16514 TO 16520
100 POKE N, CODE A$+16+CODE A$(2
)-476
110 LET A$=A$(3 TO )
120 NEXT N
130 SLOW
1000 REM DEMONSTRATION
1005 FOR N=0 TO 127
1010 RAND USR 16514
1015 PRINT CHR$ N; "-"; CHR$ N
1020 RAND USR 16527
1025 PRINT CHR$ (N+128); "-"; CHR$
(N+128)
1030 RAND USR 16544
1035 PRINT CHR$ (N+128); "-"; CHR$
(N+128)
1040 RAND USR 16561
1045 PRINT CHR$ N; "-"; CHR$ N
1050 NEXT N

```

TS2068

This short program was submitted by Bernard Bush as part of a larger article on "Playing With The Character Set", which may be published in a future issue.

```

5 LET b=0
10 LET a=23805
20 PRINT
30 PRINT "T-S HORIZONS"
40 POKE A,B
50 LIST
60 PAUSE 250
70 LET B=B+1
75 POKE 23692,-1
80 GO TO 20

```

TS2068

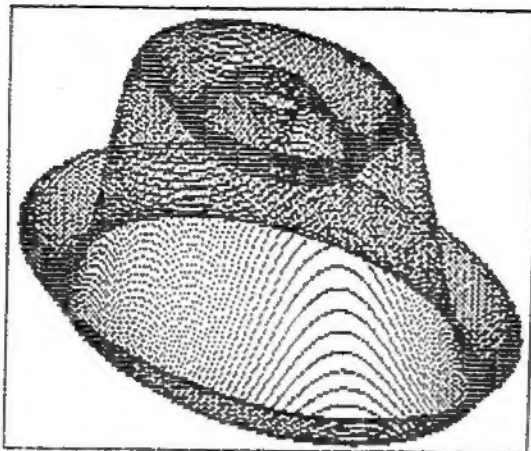
The following program by T. Knyszek appears in the April issue of "RAMTOP", the Cleveland User Group newsletter. (See User Group listing for address).

```

10 REM HI RE3 HAT by T Kruszek
20 PLOT 0,0: DRAW 0,175: DRAW
255,0: DRAW 0,-175: DRAW -255,0
30 REM Lines 40 to 130 calcu-
late X and Y for PLOTTING.
35 LET xs=.78: LET ys=.85
40 LET p=128: LET q=95: LET xp
=144: LET xr=1.5*PI: LET yp=56:
LET yr=1
50 LET zp=54: LET xf=xr/xp: LE
T yf=yp/yr: LET zf=xr/zp: LET xq
=xp/zp
60 FOR k=-zp TO zp
70 LET zt=k*xq
80 LET xl=INT (.5+SQR (xp*xp-z
t*zt))
90 FOR t=-xl TO xl
100 LET xt=SQR (t*t+zt*zt)*xf
110 LET yy=(SIN (xt)+.4*3IN (3*
xt))*yf
120 LET x=(xs*(t+k))+p
130 LET y=(ys*(yy-k))+q
140 PLOT x,y
150 NEXT t
160 NEXT k
170 STOP

```





TS2068

This program appeared in the Triangle Sinclair Newsletter. (See User Group listing).

```

10 REM **Steve Scoville's
15 REM      Pastime
20 REM TRIANGLE SINCLAIR
   USER GROUP
50 INPUT "Type a number ";n$
60 IF n$="C" OR n$="c" THEN CL
  S : GO TO 50
70 LET n=VAL n$: PRINT AT 0,0;
  "Input ";n;" produces : "
100 FOR i=1 TO 85 STEP n

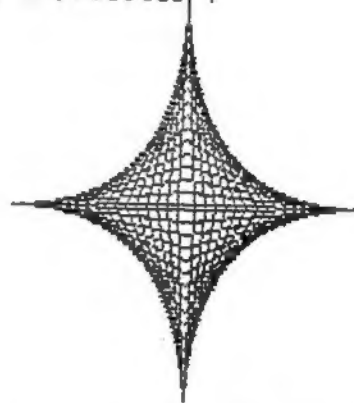
```

```

110 PLOT 213-i,88
120 DRAW i-85,i
130 PLOT 43+i,88
140 DRAW 85-i,i
150 PLOT 213-i,88
160 DRAW i-85,-i
170 PLOT 43+i,88
180 DRAW 85-i,-i
190 NEXT i
200 GO TO 50

```

Input 5 produces :



Let us know how you like the new feature. And if you send in a program let us know if you don't want your mailing address printed with the program.

TSH

People's Software Supply  
c/o Chris Nystrom  
609 E.N. 18th st.  
Abilene, Texas 79601  
915-673-3538

Hardware:

TS 2068.....\$125.00  
TS 2040.....\$50.00  
TIMEX paper.....\$9.00

Software:

\* Text Editor 2000.....\$5.00  
\* Star Trek.....\$5.00  
Guardian.....\$5.00  
Spelling II.....\$5.00  
Time Teacher I.....\$5.00

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**T/S HELP and INFORMATION**  
By John Marion

Editor's Note: In TSH #11 John answered hardware questions on the TS1000, but as you can see below he is versed on the software side also. TS Help and Information has the potential to be very helpful, but it can't continue unless we get more questions from our readers. John is also very familiar with the TS 2068, by the way.

**QUESTION ABOUT PEEK**

I have been trying for sometime to find out the necessity of making a statement such as the following:

LET X=PEEK 23631 + 256 \* PEEK 23632

What is the reason for the " + 256" and does the computer actually multiply that number by the next address?

Erich Best  
Largo, Florida

Most of the time this statement is used to find out the start of an address which is stored in two bytes, such as the start of the display file. To explain further, take the address 16514. To put this address in two byte form, you first divide the 16514 by 256, and take the integer value of that number; this is your first and most significant byte, or MSB. To get the second byte and least significant byte, multiply the MSB by 256 then subtract it from the number you started with;  $16514 - (256 * \text{MSB}) = \text{LSB}$ ;  $16514 - (256 * 64) = \text{LSB}$ ;  $16514 - 16384 = 130$ . Now our LSB is 130.

Now to return the number back to normal, do the following:

LET X=LSB+256\*MSB or LET X=130+256\*64;  
X=16514.

JDM

**TI 99-4A KEYBOARD PROJECT  
PLANNED FOR NEXT ISSUE**

For those of you who haven't heard Radio Shack is offering a surplus keyboard from the TI home computer. This keyboard makes an excellent addition to your ZX81, TS 1000, or even the TS 1500. Although the keyboard must be re-wired, it is well worth the three dollars' yes, you read right, only three dollars. This is a far cry from the ten to thirty dollars for an unwired keyboard available from other sources. Next month I

hope to have plans for wiring up and installing this keyboard to your computer. I am in the process of doing mine now. If you were unable to get one of the keyboards from Radio Shack, a surplus company in Florida is offering the same one for six dollars. This is still a bargain.

The address is:  
Marlin P. Jones and Assoc.  
P.O. Box 12685  
Lake Park, Florida 33403

That's it for this month. I hope to hear from you, believe me I need the material.

My address again is:  
TS Help and Information  
John Marion  
HC 63, Box 650  
Greenup, KY 41144

TSH

**USER GROUPS**

TRIANGLE Sinclair User Group  
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Toronto, M5W 1X9, Canada

Southern Virginia Timex User Network (STUN)  
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Gladehill, VA 24092  
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(Group is seeking to exchange newsletter with other groups.)

Atlanta TS User Group  
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Atlanta, GA 30307  
Bret Lanius, (404) 377-4348 (evening)

Greater Cleveland Sinclair Users Group  
6514 Bradley Avenue (Down)  
Parma, OH 44129  
James G. DuPuy  
Newsletter: The Ramtop

**Is your group listed?**

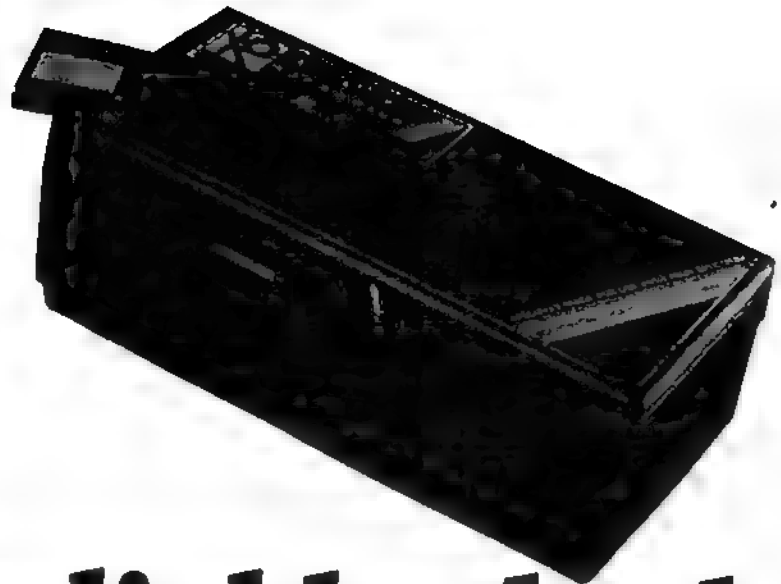
**CORRECTION:** The Damco Electronics micro-drive is compatible with the TS2040 printer, despite what was said in TS Horizons #12. We apologize to Dave Macarone of Damco and we hope that no one was put off or confused by our error.

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How much would you expect to pay for a dual 128K fast access storage system for your Timex 2068 that included Centronics and RS232 interfaces, Spectrum software and buss emulation, and free word processing software as standard?

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**THE COMPUDEX TELEPHONE DIALLING SYSTEM**  
For the TS1000/ZX81  
By Paul Hunter

I have, over the past few months, had an opportunity to use the CompuDex telephone dialling system designed and produced by John Brumbach (CompuDex, Inc., 7736 N. Harlem Avenue, Niles, Illinois 60648). This system is a hardware/software add-on for the ZX81/TS1000/TS1500 which stores as many telephone numbers as you have room for and calls any one of those number for you on command. It sells for \$89.95.

#### The hardware

The board, 4.5 by 8 inches, fits on the rear of the computer like most other devices and has an extension on the back for additional peripherals. It is compatible with any combination of printer or memory (including the Hunter NVM board).

On the board are two modular phone plugs -- one is connected to your telephone and the other goes to the phone line with a modular cord (supplied). The modification to your phone system is completely transparent when the computer is off (i.e. use the phone as you normally would without complications).

There's a miniature loudspeaker on the board through which telephone signals (dialling, ringing, speech, etc.) can be monitored before picking up the receiver. The rest of the circuit (six IC's, line isolation transformer, and a few discrete components) deals with tone detection, tone generation, and output port selection. The board is single-sided and well laid out with a few jumper wires. In the production model the board could well be reduced in size.

Two potentiometers allow adjustment of speaker volume and sensitivity in tone detection. The latter is very difficult to adjust when the system is plugged in and running -- the RAM pack gets in the way of your screwdriver. A vertically mounted pot would be much better. (Note added: John Brumbach tells me that the potentiometer will be replaced by a more sensitive vertically-mounted one.)

A: AGAIN?      Figure 1

B: NUMBER?

C: CODE?

E: EDIT?

L: LIST?

S: SCREEN?

Z: SAVE?

+: ADD SCREENS?

\$: DUMP TO CARD?

Figure 2

A: 3714712	DOCTOR
B: 3326525	FIRE
C: 3725112	POISON CENTER
D: 3326526	POLICE
E: 4071212	TIME
F: 3217576	WEATHER

#### The software

The program is written in BASIC with some machine code routines. After loading without difficulty (2 minutes) the display shown in Figure 1 comes up on the screen.

Possible responses are: A: to redial a number (shown on the screen); B: to enter a number to call in "immediate mode"; C: to call a number specified by a code such as POLICE or MOM; E: to edit a directory; L: to display the primary directory; S: to display any directory; Z: to save the program and directories on tape; +: to add a directory; and finally, \$: to dump the program and data into the 8-16K region.

Most of the routines work as you might expect. The dialling is superfast and has to be heard to be believed. Automatic redial is an option if there is no reply (after about 8 rings) or if a busy signal is encountered. Entering 'X' from the keyboard will interrupt the dialling routine at any time.

One of the first things you do with the unit is to enter a directory of 22 phone numbers and in order to do so you would answer "+" form the main menu. After some prompts and answers a ruler scale is presented. You then enter the number followed by an identifier for your own convenience. An example is shown in Figure 2.

It's disconcerting to see the number disappear on hitting ENTER -- you have no idea what the directory is going to look like until you've entered all 22 numbers (or blanks). So remember the format.

To make a phone call you load the program, choose "L" or "S" and then the letter corresponding to the number desired. You can also enter numbers directly. The progress of the call can be monitored on the loudspeaker so there's no need to pick up the receiver until connection is made. It's almost essential to have the program and the directories permanently loaded -- no one wants to spend 2 minutes loading a tape simply to dial a 7-digit number. In these days of \$15 TS1000's it's worth having a dedicated computer.

The BASIC program is quite easy to follow and customize for your own requirements. For example, you might want to use the unit to make calls through MCI and have the MCI tone recognized automatically. You might also wish to have the screen cleared before being prompted for entry of a number or code. You can also choose between normal and inverse video. Such modifications are easy to make.

The unit is certainly recommended for those of you who do a lot of telephoning -- it surely beats having to enter the 22 numbers for an MCI call. TSH



# WORM Enhancements

Modifications to WORM Word Processor  
By Allen Wolach

Editor's Note: The following article expands upon Gordon Young's program published in issues 5, 6, 7, and 9 of TS Horizons.

Recently there has been a good deal of interest in the DVORAK keyboard arrangement. The DVORAK keyboard requires less finger movement to type a series of letters as compared to the ordinary QWERTY arrangement. It is estimated that 70 percent of typing is on the home row of a DVORAK keyboard. Only 30 percent of typing is on the home row of a QWERTY keyboard. Apple IIC microcomputers come with removable keys and software to allow users to use the keyboard as a QWERTY or DVORAK keyboard.

Users of WORM who have installed a regular keyboard may want to try the DVORAK keyboard arrangement. The following figure shows the layout for a Timex/Sinclair 1000 DVORAK keyboard. The positions of two letters, V and S, were moved to accommodate the smaller number of keys on a Timex/Sinclair keyboard as compared to a standard keyboard. Punctuation marks (other than !, ;, ., and ,) are left in the positions that they occupied on the original Timex/Sinclair keyboard.

The WORM word processor can be modified to accept input from the keyboard in DVORAK fashion. A user may want to tape the DVORAK letters over the appropriate keys to facilitate using the new keyboard arrangement.

Modify WORM by entering WORM, entering the following program, and entering GOTO 9000. Then enter the numbers in Listing 1 as they are requested.

9000 FAST

9010 FOR I=17315 TO 17366

9020 SCROLL

9030 PRINT "ENTRY ";I-17314;" ";

9040 INPUT X

9050 PRINT X

9060 POKE I,X

9070 NEXT I

9080 POKE 17377,60

9090 POKE 17378,188

9100 SLOW

9110 STOP

Listing 1. Entries for program segment to create DVORAK keyboard.

166	189	175	170	26	186
174	169	168	173	185	179
178	167	183	177	187	181
180	190	172	176	184	182
171	14	38	61	47	42
27	58	46	41	40	45
57	51	50	39	55	49
59	53	52	62	44	48
56	54	43	25		

The numbers are entered row by row (left to right).

When the numbers are entered and the microcomputer has stopped, delete statements 9000 through 9110 to complete the modification.

If your printer interface reverses upper case and lower case letters, change lines 9080 and 9090 in the preceding program to:

9080 POKE 17377,188

9090 POKE 17378,60

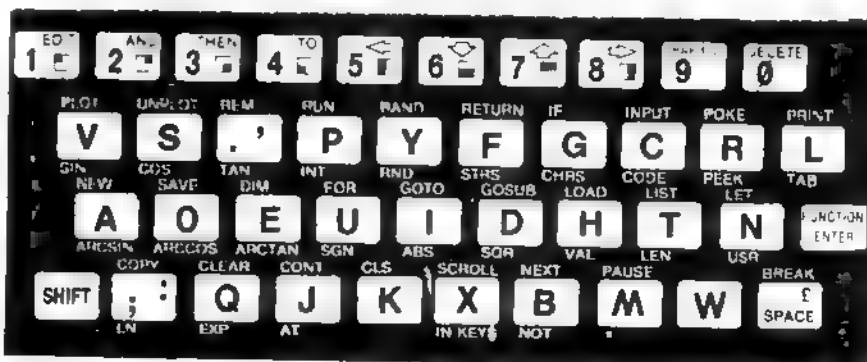
and use the entries in Listing 2 instead of Listing 1.

Listing 2. Entries for program segment to create DVORAK keyboard (upper and lower case reversed).

38	61	47	42	26	58
46	41	40	45	57	51
50	39	55	49	59	53
52	62	44	48	56	54
43	14	166	189	175	170
27	186	174	169	168	173
185	179	178	167	183	177
187	181	180	190	172	176
184	182	171	25		

My Data Assette serial/parallel printer interface represents lower case letters as inverse letters and upper case letters as

DVORAK Keyboard (Modified for TS 1000)



ordinary, not inverted, letters. Gordon Young uses the reverse of this representation. If other readers have the same problem, they can load WORM and then RUN, and DELETE the following five line program. The program will reverse the ordinary and inverted letters in WORM so that an interface such as the Data Assette will work properly.

```
8000 FOR I=17315 TO 17340
8010 POKE (I+26), PEEK I
8020 POKE I, PEEK (I-44)
8030 NEXT I
8040 STOP
```

WORM does not offer the option of printing text that is not right justified. In addition, WORM does not offer the option of controlling the number of lines that are printed on a page. Suppose that the first page of text goes on a sheet with a letter head. This page may only accommodate 25 lines of text. Subsequent pages may require 32 lines of text. I have written a modification for WORM that gives the user the option of not justifying the right margin and controlling page length.

When the program requests

NUMBER OF LINES THIS PAGE?

the user enters a number. If 12 is entered, 12 lines are printed and the microcomputer stops and again requests

NUMBER OF LINES THIS PAGE?

At this point a new sheet of paper can be inserted (or the paper in the printer can be moved to a new location). If the paper is not moved, the printer will continue printing on the next line. If a number that is larger than the number of lines in WORM is entered, the microcomputer will print the remainder of the text (or the entire text if nothing has been printed).

Modify WORM by loading WORM, removing statements 6000 through 6010, and inserting the following statements.

```
6000 CLS
6010 LET Z=1
6012 LET X=1
6014 LET V=1
6020 PRINT "RIGHT JUSTIFY? (Y/N)"
6030 IF INKEY$="Y" THEN GOTO 6060
6040 IF INKEY$="N" THEN GOTO 6070
6050 GOTO 6030
6060 LET Z=0
6070 CLS
6080 PRINT "NUMBER OF LINES THIS
PAGE?"
6090 INPUT Y
6100 CLS
6110 RAND USR 17911
6120 CLS
6130 FAST
```

```
6140 LET W=1
6150 IF Z=0 THEN GOTO 6310
6160 IF W>=LEN P$ THEN GOTO 6210
6170 IF P$(WTO W)<>" " THEN GOTO 6
210
6180 LET W=W+1
6190 LPRINT " ";
6200 GOTO 6160
6210 FOR I=WTO LEN P$
6220 IF P$(ITO I)<>" " THEN GOTO 6
260
6230 IF V=1 THEN LPRINT " ";
6240 LET V=2
6250 GOTO 6280
6260 LPRINT P$(ITO I);
6270 LET V=1
6280 NEXT I
6290 LPRINT
6300 GOTO 6320
6310 LPRINT P$
6320 IF PEEK 17907=0 THEN GOTO 641
0
6330 RAND USR 17918
6340 LET X=X+1
6350 IF (X-1)<>Y THEN GOTO 6140
6360 PRINT "NUMBER OF LINES THIS
PAGE?"
6370 INPUT Y
6380 CLS
6390 LET X=1
6400 GOTO 6140
6410 SLOW
6420 GOTO 0010
```

Have any readers noticed that the length of the BASIC program in WORM affects the operation of WORM? If WORM goes into never, never land while text is being entered, modify WORM by adding 1, 2, or 3 REM statements to the program. These statements should be about as long as REM statement 4 in the program. Infact, the added REM statements can be replications of statement 4 placed in statements 6, 7, and 8. Check your program or modified program to see if it goes into never, never land by running WORM and filling the text file with 6000 entries. This easily can be accomplished by placing a heavy object on one of the keys while the program is in the write mode. TSH

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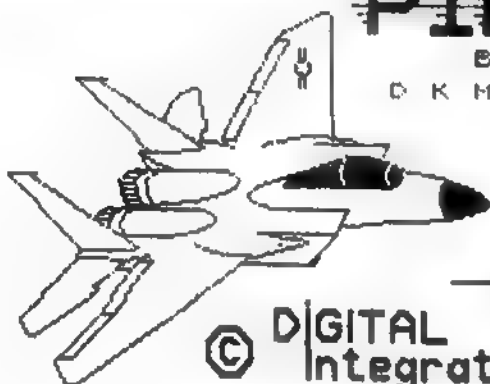
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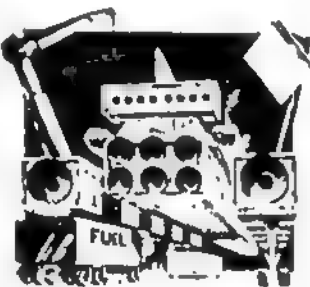
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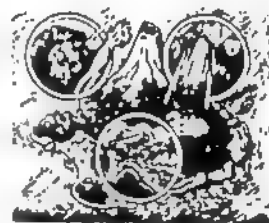
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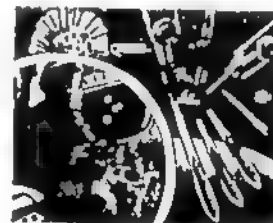
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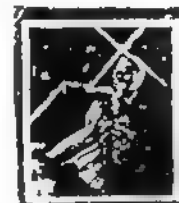
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# TEXT EDITOR 2000

*Chris Nystrom*

Text Editor 2000 is my attempt to make a full featured text editor using only Spectrum compatible BASIC.

To begin with, this text editor is an expansion of a very simple concept. Try this:

```
10 INPUT AT 21,0; AT 0,0; LINE a$
20 LPRINT a$
30 GOTO 10
```

This is a very simple way to use the editing system built into your TS 2068 (or Spectrum), and Text Editor 2000 is merely an expansion of this concept.

Text Editor 2000 is menu driven, which means that a list of choices is presented, and whenever the prompt 'Selection?' appears, all you need to do is push the key corresponding to the numbered option you wish.

For example, option 9 (Quick Note) is the short program described above. A cursor will appear at the top left of the screen. I am assuming that you are already familiar with the TIMEX Sinclair editing system described in the USER'S MANUAL (chapter 2).

Using the Quick Note option allows typing text on the screen and upon hitting the ENTER key, the text will be printed. When entering text, be especially careful never to press SHIFT 6, because all of the text on the screen will be lost. If this should happen to you do not RUN the program. Type

GOTO 800

It is best to type in text a paragraph at a time, and you should not use multi-character tokens. To get back to the menu from Quick Note, hit the ENTER key without typing in any text.

If you wish to use the various other editing and storage options of Text Editor 2000, the text will need to be stored in the computer's memory, by choosing selection 0, INPUT TEXT. This option works exactly like the Quick Note option, except that the text is not immediately printed. Also, the last two lines that were entered are displayed, so that you can keep track of where you are.

To Input Text type in a line of 32 characters or less and press ENTER. This will place the cursor at the first space of the next line. If the last word you are adding to a line will make that line more than 32 characters, hyphenate the word and press ENTER.

Adding blank spaces at the end of a line until the cursor appears in the line below has the same result.

Choose selection 7 to OUTPUT TEXT either to the screen for review, or to the printer. You will be prompted on whether or not the text is to be printed. Answer by pushing the Y or N keys. If your answer is N, the text will be displayed on the screen. If your answer is Y, then you will be prompted on whether or not the text is to be doubles spaced, and whether or not a 64 column printout is desired (more on this later). If a 64 column printout is not desired, then you will be asked whether or not there are any screen\$ to be loaded in (more on this later, also).

To CLEAR the text, choose selection 8.

Options 1 and 2 allow SAVEing and LOADING text files. Each file should have a name of no more than 10 characters. When you save a file, you will be prompted on whether or not you would like to verify the save.

To INSERT TEXT, choose selection 3. This takes you to the full screen editor. In this mode you use the regular Shift 5 through shift 8 keys to move the cursor around the text. In addition, Shift 3 will move the cursor down a page, and Shift 4 will move the cursor up a page. Also, any time you are in the full screen editor mode, you can get back to the main menu by pushing Symbol Shift A (the STOP token).

What you want to do is place the cursor on the first character that you want to appear AFTER the insertion, and then hit the ENTER key. You will be prompted on whether or not to be inserted needs to be loaded in. If not you will be given a cursor to type in the text. If at this point you decide that you do not want to insert any text, then just hit ENTER without typing in text. After the text is inserted it, it will be displayed a page at a time.

Selection 4, DELETE TEXT, works very similarly to INSERT TEXT, except that you move the cursor to the first character that you want to delete. When you press ENTER, the character will be marked with an asterisk, and then the cursor will move one space to the right. Now you move the cursor to the last character that you want to delete and press ENTER again. If you only want to delete one character that you want to delete and press ENTER again. If you only want to delete one character, then move the cursor, back to the marked character. After you press ENTER the second time, you will be prompted on whether or not you to insert text at the same place as the deleted text.

Selection 5 will JUSTIFY the right hand margin. It only searches back 10 character,

so you can write on this left part of the screen, without unwanted justification. This prevents:

Dear John,  
from becoming:

Dear

John,

The last line of a paragraph is not justified. In fact, any line that precedes a line that starts with a space, will not justify. The last line is never justified.

SEARCH AND REPLACE, selection 6, is useful for correcting misspelled words. You will be prompted for the string of characters to be searched for. This would be the word that is incorrectly spelled. You can get back to the menu from here by pushing ENTER without typing in any text. You will then be prompted for the string of characters to be inserted in place of the old string. This would be the correctly spelled word. The new text will be displayed one character at a time as it is finished.

To CENTER a line of text, choose selection A. You will then be in the full screen editor mode, but only use the 6 and 7 keys, and place the cursor on the first character of the line you want to be centered, and hit ENTER. The line will be centered and the text will be displayed on the screen.

Selection 8, TYPE OVER, sends you to the full screen editor and allows you to just type over the text that you want to change.

Selection C allows you to change the PAPER and BORDER colors. INK is always set to maximum contrast.

A 64 column printout is possible by printing out one side and then the other, and then taping the two together. To justify and center the text 64d columns, you must change the width by pushing 'W' at the selection prompt and then entering '64'. Be sure to change the width back to 32, before you print out the text.

There is also a simple cut and paste routine, that allows you to place a screen of graphics into your text. After you have finished editing your text, but before you imbed control characters, insert the characters 'SCR\$' where you want the graphics to go. When you print out your text answer yes to the screen\$ prompt. The screens will be loaded in and copied in their proper place in the text.

You should also be aware of characters not found on the keyboard. As explained on page 25 of the USERS GUIDE, there are some extra

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226 IF $<10 THEN GO TO 255
227 LET $=704
228 IF $<1 THEN LET $=1
229 GO SUB 9500
230 LET $=22
231 LET $=1-1
232 LET $=32
233 GO TO 50
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985 REM
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987 REM
988 REM
989 REM
990 REM
991 REM
992 REM
993 REM
994 REM
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996 REM
997 REM
998 REM
999 REM
1000 REM

```

```

760 PRINT AT 12,8;"5 - Justify
Text"
765 PRINT AT 13,8;"6 - Search a
nd Replace"
770 PRINT AT 14,8;"7 - Text Out
put"
775 PRINT AT 15,8;"8 - Clear Te
xt"
780 PRINT AT 16,8;"9 - Quick No
te"
785 PRINT AT 17,8;"A - Center T
ext"
790 PRINT AT 18,8;"B - Type Ove
r"
795 PRINT AT 19,8;"C - Change C
olors"
800 GO SUB 9100
805 PRINT $1,11;"Selection
?"
810 BEEP .1,10
815 PAUSE 0
820 LET $=INKEY$
825 IF $="Z" OR $="z" THEN
COPY
830 CLS
835 IF $="W" OR $="w" THEN
GO TO 4500
840 IF $="A" OR $="a" THEN
GO TO 5500
845 IF $="B" OR $="b" THEN
GO TO 3500
850 IF $="C" OR $="c" THEN
GO TO 8500
855 IF $="S" OR $="s" THEN
GO TO 9400
860 IF $<CHR$ 48 OR $>CHR$ 50
THEN GO TO 720
865 BEEP .05,5
870 IF $="0" THEN GO TO 900
875 GO TO VAL $+1000
880 REM
885 INPUT TEXT
IF LEN $>11040 THEN
GO TO 1500
905 LET $=""
910 IF LEN $<64 THEN GO TO 920
915 LET $=LEN $-63 TO
LEN $
920 INPUT AT 21,0;"-----
I
NPUT TEXT";AT 0,0;(b$); LINE $
925 IF $="" THEN GO TO 900
930 IF $="" THEN GO TO 905
935 GO SUB 9200
940 LET $=LEN $+1
945 GO SUB 9300
950 LET $=1 TO $+LEN $-1=
$

```

characters in the extended mode. To get in to the extended mode, press the caps shift and symbol shift at the same time.

Also there are some defined characters in the graphics mode. To get in to graphics mode type Shift 9.

These characters allow you to write things like H<sub>2</sub>O, 2x<sup>3</sup>, and 1/3 cup of sugar. The box is useful for checklists, and graphics characters D-I are useful for enclosing something in a box.

To copy this program, type 'S' at the 'Section?' prompt.

Expert users might experiment with inserting control characters into their text. These are available directly from the keyboard in the extended mode:

```

0-7 PAPER color
8 BRIGHT off
9 BRIGHT on
Shift 0-7 INK color
8 FLASH off
9 FLASH on

```

These will interfere with the editing ability of this program, so they should only be inserted after the text has been completely edited.

There are two POKES that you can add to speed

```

955 DIM us(1)
960 GO TO 985
965 LET d=INT (LEN as/32-.01)+1
970 DIM is(d+32)
975 LET is=as
985 BEEP .17
990 GO TO 900
995 REM ----- SAVE TEXT
1000 INPUT "-----
      Name of Text: ";ns
1010 IF ns=CHR$ 226 OR ns="" THEN
      GO TO 800
1020 IF LEN ns>10 THEN
      LET ns=ns(1 TO 10)
1030 GO SUB 9100
1040 PRINT #1,AT 1,5;"SAVING AS
      ";ns
1050 SAVE ns DATA is(1)
1060 BEEP .1,10
1070 GO SUB 9100
1080 PRINT #1,AT 1,7;"VERIFY SAV
      E (Y/N)"; FLASH 1;"?
1090 PAUSE 0
1100 LET as=INKEY$
1110 IF as="N" OR as="n" THEN
      GO TO 1150
1120 GO SUB 9100
1130 PRINT #1,AT 1,5;" VERIFYING
      ";ns
1140 VERIFY ns DATA is(1)
1150 BEEP .1,7
1160 GO TO 800
1190 REM ----- Full File
1500 PRINT AT 7,9;"TEXT FILE FUL
      L"
1510 PRINT AT 9,10;"SAVE TO TAPE
1520 BEEP .1,7
1530 GO TO 800
1590 REM ----- LOAD TEXT
2000 INPUT "-----
      Name of Text: ";ns
2010 IF ns=CHR$ 226 THEN
      GO TO 800
2020 IF LEN ns>10 THEN LET ns=
      ns(1 TO 10)
2030 GO SUB 9100
2040 PRINT #1,AT 1,0,"      LOADI
      NG ";ns

```

```

2050 DIM is(1)
2060 LOAD ns DATA is(1)
2070 BEEP .1,7
2080 GO TO 800
2090 REM ----- INSERT TEXT
3000 LET bs="INSERT TEXT"
3010 GO SUB 20
3020 CLS
3030 GO SUB 9100
3040 PRINT #1,AT 1,2;"TEXT NEED
      TO BE LOADED (Y/N)"; FLASH 1;"?
3050 PAUSE 0
3060 LET as=INKEY$
3070 IF as="Y" OR as="y" THEN
      GO TO 3200
3080 INPUT AT 21,0;"-----
      EAT TEXT";AT 0,0;"LINE as
3100 IF as="" THEN GO TO 800
3110 GO SUB 9200
3120 GO SUB 9300
3130 LET is(d1 TO d1+LEN as-1)=
      as
3140 GO SUB 9500
3150 GO TO 7030
3190 REM ----- Load Insert
3200 INPUT "-----
      Name of text: ";ns
3210 IF ns=CHR$ 226 THEN
      GO TO 800
3220 IF LEN ns>10 THEN LET ns=
      ns(1 TO 10)
3230 GO SUB 9100
3240 PRINT #1,AT 1,6;"LOADING "
      ";ns
3250 LOAD ns DATA vs(1)
3260 BEEP .1,10
3270 LET d=INT (LEN vs/32-.01)+1
3280 GO SUB 9210
3290 GO SUB 9300
3300 GO SUB 9400
3310 LET nd1=1+LEN vs
3320 GO SUB 9510
3330 GO TO 7030
3400 REM ----- TYPE OVER
3500 LET bs="TYPE OVER"
3510 GO TO 25
3990 REM ----- DELETE TEXT
4000 LET bs="DELETE TEXT"

```

```

4010 GO SUB 20
4020 CLS
4030 IF d1=1 AND d2=LEN is THEN
      GO TO 8050
4040 LET d=INT ((d2-d1+1)/32)
4050 GO SUB 9210
4060 GO SUB 9300
4070 LET nd1=1
4075 LET d=d1
4080 LET d1=d2+1
4090 GO SUB 9510
4100 GO SUB 9100
4105 LET d1=d
4110 PRINT #1,AT 1,0;" INSERT A
      T SAME PLACE (Y/N) "; FLASH 1;"?
4120 PAUSE 0
4130 LET as=INKEY$
4140 CLS
4150 IF as="Y" OR as="y" THEN
      GO TO 3030
4160 DIM us(1)
4170 GO TO 7030
4490 REM ----- Change Width
4500 INPUT "-----
      NUMBER OF COLUMNS:
      ";w
4510 GO TO 800
4590 REM ----- JUSTIFICATION
5000 IF is="" THEN RETURN
5010 FOR i=1 TO INT (LEN is/w-
      .01)
5020 IF is(i+w)(">)" THEN
      GO TO 5190
5030 IF is(i+w+1)="" THEN
      GO TO 5190
5040 FOR j=0 TO 10
5050 IF is(i+w-j)(">)" THEN
      GO TO 5060
5060 NEXT j
5070 GO TO 5190
5080 LET d=2
5090 FOR j=3 TO w
5100 IF is((i-1)*w+j)(">)" THEN
      GO TO 5160
5110 FOR k=0 TO w-j-1
5120 LET is(i+w-k)=
      is(i+w-k-1)
5130 NEXT k

```

up keyboard input. I have left them out because they have to do with the repeating of the keys, and I have found the extra speed not worth the typing errors caused by the keys repeating. However, you can add them if you prefer:

```

9900 POKE 23561,10
9910 POKE 23562,3

```

I hope that Text Editor 2000 is a demonstration of the power in Sinclair Extended BASIC. I have not used any of the TS 2068 specific commands, so owners of emulators and ROMswitches should not have to switch back and forth. Since it is written in BASIC, this program could probably be used with printer interfaces that support LLIST and COPY. Another project might be to combine this program with the TASWIDE screen utility.

If you do not want to type this program in, I will send you a copy for \$6. Also feel free to contact me if you have any questions:

Chris Nystrom  
 People's Software Supply  
 609 E.N. 18th Street  
 Abilene, Texas 79601  
 915/673-3538

One final tip: The paper for the Radio Shack TP-10 printer works great on the 2040 printer, and it can be bought at any Radio Shack.

TSH

continued on page 22



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THEN

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J ts-w-

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THEN


" THEN

) < " "

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n page 22



*"...received my moneys worth with just one  
CTM."*

*—J. Trenbick*

*"...always stop to read CTM. even though  
most other magazines I receive (and write for)  
only get cursory examination..."*

*—Fred Blechman, K6UGT*

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Written in machine language expressly for those programming in BASIC on the TS 2068, the Toolkit provides 5 useful functions:

- Renumbers a program beginning at any line number, using any initial line number, in any step, up to 9999. Renumbers explicit line references of: GO TO, GOSUB, LIST, LLIST, RUN, RESTORE, and SAVE "... LINE. Also works with VAL references, e.g., GO TO VAL "1500". Lists lines containing undefined line numbers (such as GO TO 1000).
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- Finds any string of characters and lists every line containing that string.
- Replaces any string, in every line in which it is found, by any other string.
- Deletes all lines beginning with REM. Helps conserve memory and load time for operating versions of your programs.

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As the only full-featured machine language disassembler available for the 2068, this product has received wide acceptance since first being introduced in the final issue of SYNC magazine. The ZEAL Disassembler was favorably reviewed in the May, 1984 issue of the C.A.T.S. newsletter. It provides a unique combination of features supporting debugging and documentation of your own code and study of the TS 2068 ROM:

- Machine code routines for fast listings to screen or printer
- Zilog mnemonics; labeling of system variables; decimal addresses
- Choice of disassembly modes - normal instruction mode plus byte (DEFB) mode and word (DEFW) mode
- Resolution of relative jump addresses (for JP's and DJNZ's) to absolute addresses
- Disassembly relocation - allows code not in its normal location to be documented as if it were
- ROM bank-switching - disassembly of the extension ROM is supported
- Identification of data bytes following RST 00's and RST 40's
- Cross-reference listings of all JP's and CALL's

Cassette and user information: \$15.95 ppd.

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```

5140 IF I$(I:W)<>" " THEN
5150 GO TO 5190
5160 LET J=J+1
5170 NEXT J
5180 LET d=d+1
5190 GO TO 5090
5200 IF PEEK 23689=2 THEN
5210 CLS
5220 PRINT I$((I-1)*W+1 TO
5230 I*W)
5240 NEXT I
5250 IF PEEK 23689=2 THEN CLS
5260 PRINT I$((I-1)*W+1 TO I
5270 *W)
5280 BEEP .1,7
5290 GO TO 5090
5300 REM ===== CENTER TEXT
5310 LET b$="CENTER TEXT"
5320 GO SUB 20
5330 CLS
5340 LET s1=0
5350 FOR I=d1 TO d1+W-1
5360 IF I$(I)<>" " THEN
5370 GO TO 5590
5380 LET s1=s1+1
5390 NEXT I
5400 IF s1=W THEN GO TO 800
5410 LET s2=0
5420 FOR I=d1+W-1 TO d1 STEP -1
5430 IF I$(I)<>" " THEN
5440 GO TO 5550
5450 LET s2=s2+1
5460 NEXT I
5470 IF s1=s2 THEN GO TO 800
5480 LET s2=W-s2-1
5490 LET b$=I$(d1+s1 TO d1+s2)
5500 FOR I=d1 TO d1+W-1
5510 LET I$(I)=b$
5520 NEXT I
5530 LET s=(W/2)-(LEN b$/2)
5540 LET I$(d1+s TO d1+s+LEN b$)
5550 =b$
5560 GO TO 7030
5570 REM ===== SEARCH AND REPLACE
5580 INPUT AT 21,0;"-----
5590 FIRST STRING: AT 0,0; LINE b$
5600 IF b$="" THEN GO TO 500
5610 INPUT AT 21,0;"-----
5620 SECOND STRING: AT 0,0; LINE a$
5630 LET d=0
5640 LET s2=0
5650 GO SUB 6500
5660 IF d=1 THEN GO TO 6200
5670 LET d=INT ((LEN a$-LEN b$)/
5680 32-.01)+1
5690 GO SUB 9210
5700 LET d1=s2
5710 GO SUB 9300
5720 LET I$(d1 TO d1+LEN a$-1)=
5730 a$
5740 LET n=d1-1+LEN a$
5750 LET d1=d1+LEN b$
5760 GO SUB 9510
5770 GO TO 6050
5780 IF PEEK 23689=2 AND
5790 PEEK 23689=3 THEN CLS
5800 PRINT I$(s2 TO )
5810 BEEP .1,7
5820 GO TO 600
5830 REM ===== Search
5840 LET s2=s2+1
5850 IF s2=1 THEN GO TO 5540
5860 IF PEEK 23689=2 AND
5870 PEEK 23689=3 THEN CLS
5880 PRINT I$(s2-1);
5890 IF s2+LEN b$-1>LEN I$ THEN
5900 GO TO 6570
5910 IF I$(s2 TO s2+LEN b$-1)=b$
5920 THEN RETURN
5930 GO TO 6530
5940 LET d=1
5950 RETURN
5960 REM ===== TEXT OUTPUT
5970 GO SUB 9100
5980 PRINT #1, AT 1,5;"TO THE PRI
5990 NTER (Y/N)"; FLASH 1;"?"
6000 PAUSE 0
6010 LET a$=INKEY$
6020 CLS
6030 IF a$="Y" OR a$="y" THEN
6040 GO TO 7100
6050 FOR I=1 TO LEN I$ STEP 704
6060 CLS
6070 IF I+703>LEN I$ THEN
6080 GO TO 7055
6090 PRINT I$(I TO )
6100 GO TO 800
6110 PRINT I$(1 TO I+703)
6120 GO SUB 9100
6130 PRINT #1, AT 1,0;"NEXT PAG
6140 E (Y/N)"; FLASH 1;"?"
6150 PAUSE 0
6160 LET a$=INKEY$
6170 BEEP .1,7
6180 IF a$="N" OR a$="n" THEN
6190 GO TO 800
6200 NEXT I
6210 GO TO 800
6220 GO SUB 9100
6230 PRINT #1, AT 1,7;"DOUBLE SPA
6240 CE (Y/N)"; FLASH 1;"?"

```

```

7120 LET d$=0
7130 PAUSE 0
7140 LET a$=INKEY$
7150 IF a$="Y" OR a$="y" THEN
7160 LET d$=1
7170 GO SUB 9100
7180 PRINT #1, AT 1,7;"DOUBLE WID
7190 TH (Y/N)"; FLASH 1;"?"
7200 PAUSE 0
7210 LET a$=INKEY$
7220 CLS
7230 IF a$="Y" OR a$="y" THEN
7240 GO TO 7600
7250 GO SUB 9100
7260 PRINT #1, AT 1,4;"ARE THERE
7270 SCREENS (Y/N)"; FLASH 1;"?"
7280 PAUSE 0
7290 LET a$=INKEY$
7300 CLS
7310 IF a$="Y" OR a$="y" THEN
7320 GO TO 7330
7330 IF W<32 OR d$=1 THEN
7340 GO TO 7290
7350 PRINT #3, I$
7360 BEEP .1,7
7370 GO TO 800
7380 LET s1=1
7390 LET s2=LEN I$
7400 GO SUB 7500
7410 BEEP .1,7
7420 GO TO 800
7430 REM ===== SCREENS Output
7440 LET b$="SCRs"
7450 LET s2=0
7460 LET d=0
7470 IF s1=s2 THEN LET s1=1
7480 GO SUB 6500
7490 IF d=1 THEN LET s2=LEN I$
7500 IF d<1 THEN LET s2=s2-1
7510 IF s2=0 THEN GO TO 7400
7520 IF W=32 AND d$=0 THEN
7530 LPRINT I$(s1 TO s2)
7540 IF W<32 OR d$=1 THEN
7550 GO SUB 7500
7560 IF d=1 THEN GO TO 7310
7570 GO SUB 9100
7580 PRINT #1, AT 1,0; FLASH 1;
7590 "START THE TAPE"
7600 LOAD "SCREENS"
7610 PRINT #1, AT 1,7; FLASH 1;
7620 "STOP THE TAPE"
7630 COPY
7640 CLS
7650 LET s2=s2+5
7660 GO TO 7335
7670 REM ===== Measured Output
7680 IF s1+W-1>s2 THEN
7690 GO TO 7630
7700 LPRINT I$(s1 TO s1+W-1)
7710 IF d$=1 THEN LPRINT
7720 LET s1=s1+W
7730 GO TO 7630
7740 LPRINT I$(s1 TO s2)
7750 IF d$=1 THEN LPRINT
7760 RETURN
7770 REM ===== Double Width
7780 LET f=0
7790 LET s1=1
7800 IF s1+W-1>LEN I$ THEN
7810 GO TO 7630
7820 LPRINT I$(s1 TO s1+W-1)
7830 IF d$=1 THEN LPRINT
7840 LET s1=s1+(W+2)
7850 IF s1>LEN I$ THEN
7860 GO TO 7700
7870 GO TO 7630
7880 LPRINT I$(s1 TO LEN I$)
7890 IF d$=1 THEN LPRINT
7900 IF f=1 THEN GO TO 7310
7910 LET f=1
7920 LPRINT
7930 LPRINT
7940 LET s1=W+1
7950 GO TO 7620
7960 REM ===== CLEAR TEXT
7970 PRINT #1, AT 0,0;"-----
8000 PRINT #1, AT 1,5;"ARE YOU SU
8010 RE (Y/N)"; FLASH 1;"?"
8020 PAUSE 0
8030 LET a$=INKEY$
8040 IF a$<>"Y" AND a$<>"y" THEN
8050 GO TO 800
8060 DIM I$(1)
8070 PRINT AT 9,10;"TEXT CLEARED"
8080 GO TO 800
8090 REM ===== CHANGE COLORS
8100 GO SUB 9100
8110 PRINT #1, AT 1,5;"BORDER COL
8120 OR (0-7)"; FLASH 1;"?"
8130 PAUSE 0
8140 LET a$=INKEY$
8150 IF a$<CHR$ 48 OR a$>CHR$ 55
8160 THEN GO TO 800
8170 GO SUB 9100
8180 PRINT #1, AT 1,5;"PAPER COLO
8190 R (0-7)"; FLASH 1;"?"
8200 PAUSE 0
8210 LET b$=INKEY$
8220 IF b$<CHR$ 48 OR b$>CHR$ 55
8230 THEN GO TO 8550

```

```

8500 BORDER VAL a$: PAPER VAL b$
8510 INK 0: CLS
8520 BEEP .1,7
8530 GO TO 800
8540 REM ===== QUICK NOTE
8550 INPUT AT 21,0;"-----
8560 GU
8570 ICK NOTE: AT 0,0; LINE a$
8580 IF a$="" THEN GO TO 800
8590 PRINT #3, a$
8600 BEEP .1,7
8610 GO TO 9000
8620 REM ===== CLS BOTTEM
8630 PRINT #1, AT 0,0;"-----
8640 PRINT #1, AT 1,0;"
8650 RETURN
8660 REM ===== CLEAR I$
8670 LET d=INT (LEN a$/32-.01)+1
8680 DIM U$(LEN I$)
8690 FOR I=1 TO LEN U$ STEP 704
8700 IF I+703>LEN U$ THEN
8710 GO TO 9250
8720 LET U$(I TO I+703)=
8730 I$(I TO I+703)
8740 GO TO 9270
8750 LET U$(I TO )=I$(I TO )
8760 NEXT I
8770 DIM I$(LEN U$+d*32)
8780 RETURN
8790 REM ===== ADD TEXT #1
8800 FOR I=1 TO d1-1 STEP 704
8810 IF I+703>d1-1 THEN
8820 GO TO 9340
8830 LET I$(I TO I+703)=
8840 U$(I TO I+703)
8850 GO TO 9350
8860 LET I$(I TO d1-1)=
8870 U$(I TO d1-1)
8880 NEXT I
8890 RETURN
8900 REM ===== ADD TEXT #2
8910 FOR I=1 TO LEN U$ STEP 704
8920 IF I+703>LEN U$ THEN
8930 GO TO 9440
8940 LET I$(I+d1-1 TO
8950 I+d1+702)=U$(I TO I+703)
8960 GO TO 9450
8970 LET I$(I+d1-1 TO
8980 d1-1+LEN U$)=U$(I TO )
8990 NEXT I
9000 RETURN
9010 REM ===== ADD TEXT #3
9020 LET n=d1-1+LEN a$
9030 FOR I=1 TO LEN U$-d1
9040 STEP 704
9050 IF I+703>LEN U$-d1 THEN
9060 GO TO 9550
9070 LET I$(I+n TO I+n+703)=
9080 U$(I+d1-1 TO I+d1-1+703)
9090 GO TO 9550
9100 LET I$(I+n TO )=
9110 U$(I+d1-1 TO )
9120 NEXT I
9130 DIM U$(1)
9140 RETURN
9150 REM ===== PRINT SCREEN
9160 CLS
9170 GO SUB 9100
9180 PRINT #1, AT 1,16-(LEN b$/2)
9190 /b$
9200 LET b=a+703
9210 IF b>LEN I$ THEN
9220 LET b=LEN I$
9230 PRINT I$(a TO b)
9240 RETURN
9250 REM ===== DEFINED GRAPHICS
9260 FOR I=144 TO 164
9270 FOR J=0 TO 7
9280 READ a
9290 POKE USR CHR$ I+J,a
9300 NEXT J
9310 NEXT I
9320 RETURN
9330 REM 0 - BOX
9340 DATA 255,129,129,129,129,
9350 129,129,255
9360 REM 1 - Spot
9370 DATA 0,60,126,126,126,126,
9380 60,0
9390 REM 2 - Star
9400 DATA 0,16,16,124,56,56,60,0
9410 REM 3 - Horizontal Bar
9420 DATA 0,0,255,255,255,255,0,
9430 0
9440 REM 4 - Vertical Bar
9450 DATA 60,60,60,60,60,60,60,
9460 60
9470 REM 5 - Top Right Corner
9480 DATA 0,0,63,63,63,63,60,60
9490 REM 6 - Top Left Corner
9500 DATA 0,0,252,252,252,252,
9510 60,60
9520 REM 7 - Bottom Left Corner
9530 DATA 60,60,63,63,63,63,0,0
9540 REM 8 - Bottom Right Corner
9550 DATA 60,60,252,252,252,252,
9560 0,0
9570 REM 9 - Left Arrow
9580 DATA 0,16,32,128,32,16,0,0
9590 REM 10 - Down Arrow

```

## Partial Pascal

Pascal is a computer programming language, very popular on microcomputers, invented by Professor Niklaus Wirth of the Swiss Institute of Technology. Partial Pascal is a subset of Pascal for the ZX81, Timex Sinclair 1000 and 1500.

Partial Pascal includes IF, THEN, ELSE, CASE, OF, OTHERWISE, WHILE, DO, REPEAT, UNTIL, FOR, TO, DOWNT, BEGIN and END for program control, read readln, write, writeln, reset, rewrite, eof, inkey and text for input and output, \*, DIV, MOD, abs, chr, odd, ord, pred, succ and sqr for calculations, NOT, AND and OR for decisions, PROCEDURE, FUNCTION and FORWARD for subroutines, CONST, TYPE, VAR, ARRAY, Boolean, char and integer for data; copy, fast, slow, pause and halt for computer control; plot and point for graphics; and mem, mem2, memw, move and usr for machine language.

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9798 DATA 0,16,16,16,84,56,16,0  
9799 REM + - Right Arrow  
9800 DATA 0,8,4,128,4,0,0,0  
9801 REM # - 2 Subscript  
9802 DATA 0,0,0,56,8,56,32,56  
9803 REM # - 3 Subscript  
9804 DATA 0,0,0,56,8,56,8,56  
9805 REM # - 4 Subscript  
9806 DATA 0,0,0,40,40,56,8,8  
9807 REM # - 2 Superscript  
9808 DATA 56,8,56,32,56,0,0,0  
9809 REM # - 3 Superscript  
9810 DATA 56,8,56,8,56,0,0,0  
9811 REM # - 4 Superscript  
9812 DATA 40,40,56,8,8,0,0,0

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9313 REM 1/2 - One Half  
9814 DATA 130,132,136,151,161,  
71,132,7  
9315 REM 1/3 - One Third  
9816 DATA 130,132,136,151,161,  
71,129,7  
9817 REM 1/4 - One Fourth  
9818 DATA 130,132,136,149,165,  
71,129,1  
9820 REM - START HERE  
9830 BEEP .5,10  
9840 BORDER 0: PAPER 0: INK 9:  
CLS  
9850 PRINT AT 3,0;"Text Editor 2  
000"

9860 RESTORE 9770  
9870 GO SUB 9700  
9875 DIM ts(1)  
9880 LET w=32  
9890 POKE 23600,5  
9920 GO TO 735  
9930 REM - SAVE PROGRAM  
9940 CLEAR  
9950 SAVE "TE2000" LINE 9930  
9960 BEEP .1,7  
9970 VERIFY "TE2000"  
9980 BEEP .1,7  
9990 STOP

TSH

<p>Simulating DATA, READ, and RESTORE Statements          By Allen H. Wolach          Illinois Institute of Technology</p>
--

Most versions of BASIC have DATA, READ, and RESTORE statements. If these statements can be simulated for the Timex/Sinclair 1000/ZX81, one has a powerful addition to Sinclair BASIC. The simulated DATA, READ, and RESTORE statements make it possible to translate many programs into Sinclair BASIC without making major changes in the program.

First let us review how DATA, READ, and RESTORE statements work in most microcomputers. Suppose that one has three numbers, 2, 77, and 25. These numbers could be entered in the following DATA statement.

```
10 DATA 2, 77, 25
```

The number 10 is a statement number, DATA is a key word, and 2, 77, and 25 are the three numbers. Suppose that a program contains the statements

```
40 READ Z,R
```

The first number in DATA statement 10 would be assigned to the first variable in the READ statement. The second number in the DATA statement would be assigned to the second variable in the READ statement. Thus, the variable Z would be assigned 2, and the variable R would be assigned 77. If the statement

```
70 READ Q
```

occurred later in the program, the number 25 would be assigned to the variable Q. Note that the numbers are assigned to variables in the order that they appear in the DATA statement. If a program has more than one DATA statement, the data are read from the lowest numbered DATA statement, then the next lowest statement, etc. Variables in the read statement are not limited to variables without subscripts. Thus

```
80 READ A,A(2,1),B(A),Q
```

is a valid READ statement.

BASIC has a built in pointer that is incremented every time an observation is read from the data list. The pointer then points to the next observation that will be read from the DATA list. A RESTORE statement such as

```
90 RESTORE
```

resets the pointer to the first observation in the first DATA statement. Consider the following program sequence.

```
10 DATA 4, 4, 2E22
20 DATA 2, 9E22
30 READ A
40 READ B, Z(1,1), L
50 RESTORE
60 READ Q
```

After the sequence is completed, A is equal to 4, B is equal to 3, Z(1,1) is equal to 2E22, L is equal to 2, and Q is equal to 4. The RESTORE in statement 50 resets the pointer so that statement 60 causes the first observation in the first DATA statement to be assigned to Q.

#### Simulated DATA, READ, and RESTORE Statements

The simulated DATA, READ, and RESTORE statements for Sinclair microcomputers are very similar to standard DATA, READ, and RESTORE statements. DATA statement

```
10 DATA 4,3,2E22
```

would be replaced with

```
10 LET A$="4,3,2E22;"
```

Note that a simulated DATA statement starts with the key word LET followed by a string variable, an equal sign, and a string in quotes. The string contains the individual numbers separated by commas. The last number in the string must be followed by a semicolon. The first simulated DATA statement uses A\$ after LET, the next simulated DATA statement uses B\$, the next C\$, etc. Thus, most versions of BASIC would have the DATA statements

```
10 DATA 4,3,2E22
20 DATA 2,9E22
```

while the equivalent simulated DATA statements would be

```
10 LET A$="4,3,2E22;"
20 LET B$="2,9E22;"
```

Simulated DATA statements are not affected by extra spaces before or after commas or semicolons. The simulated DATA statements must be placed earlier in the program than the subroutines that will be described below. That is, the BASIC interpreter must process these simulated DATA statements before the first simulated READ statement is encountered in the program. Simulated DATA statements are limited to numeric values. That is, strings cannot be used as DATA in simulated DATA statements.



Simulated READ statements can only contain one variable. The conventional READ statement

```
30 READ A
```

would be replaced with

```
30 GOSUB READ
35 LET A=RES
```

That is, statement 20 transfers the program to the READ subroutine and statement 35 assigns the RES(ult) of the READ to variable A. A statement such as

```
40 READ B,Z(1,1),L
```

would have the following simulated BASIC READ sequence

```
40 GOSUB READ
42 LET B=RES
45 GOSUB READ
46 LET Z(1,1)=RES
48 GOSUB READ
50 LET L=RES
```

A conventional RESTORE statement such as

```
50 RESTORE is simulated with
```

```
50 GOSUB RESTORE
```

### The Program

Figure 1 shows the statements that must be added to a program when simulated DATA, READ, and RESTORE statements are required.

Figure 1. Subroutines for Simulating DATA, READ, and RESTORE Statements

```
1 LET READ=9000
2 LET RESTORE=9180
3 LET AAA=1
4 LET BBB=1
5 LET DDD=0
(simulated Data statements are placed at
this point in the program sequence)
(the main program is placed at this point
in the program sequence)
9000 IF BBB=1 THEN LET V$=A$
9010 IF BBB=2 THEN LET V$=B$
9020 IF BBB=3 THEN LET V$=C$
9030 IF BBB=4 THEN LET V$=D$
9040 LET CCC=AAA
9050 IF V$(AAA TO AAA)="" THEN
GOTO 9110
9060 IF V$(AAA TO AAA) <> "" THEN
GOTO 9090
9070 LET DDD=1
9080 GOTO 9110
9090 LET AAA=AAA+1
9100 GOTO 9050
9110 LET RES=VAL (V$(CCC TO (AAA
-1)))
9120 LET AAA=AAA+1
9130 IF DDD <> 1 THEN RETURN
9140 LET DDD=0
9150 LET BBB=BBB+1
9160 LET AAA=1
9170 RETURN
9180 LET AAA=1
9190 LET BBB=1
9200 RETURN
```

Statements 1 through 5 should be the first statements in the program. These statements initialize values for the DATA, READ, and RESTORE Subroutines. The simulated DATA statements should be the next statements in the program. This will insure that the simulated DATA statements are processed before the DATA, READ, and RESTORE subroutines are encountered. Then the main body of the program should be inserted. Finally, the DATA, READ, and RESTORE subroutines are placed in unused, high statement numbers to avoid conflicts with the main program. Place a STOP statement between the main body of the program and the DATA, READ, and RESTORE subroutines. This will prevent the microcomputer from executing the subroutines after the program is run.

Examine statements 9000 through 9030 of Figure 1. These statements set up four consecutive simulated DATA statements in strings A\$, B\$, C\$, and D\$. If a sixth simulated DATA statement is required, it is

```
9031 IF BBB=5 THEN LET V$=E$
```

A seventh simulated DATA statement would require

```
9032 IF BBB=6 THEN LET V$=F$
```

Each simulated DATA statement uses one string variable. This string variable is no longer available for the main program. One will seldom need more than four simulated DATA statements because Sinclair microcomputers allow the user to enter a screen full of numbers in each simulated DATA statement. Variables such as AAA, and BBB have been used in the subroutines to minimize the possibility that one will inadvertently have the same variables in the main program. REMARK statements have not been inserted in the subroutines to minimize the memory required for the subroutines.

### How the Program Works

Statements 3, 4, and 5 initiate the data pointer within a statement (3), the statement pointer (4), and the statement completion pointer (5). The data pointer is started at 1, the start of the first number in the first DATA statement. The statement pointer is also set to 1 to point to the first simulated DATA statement. The statement completion pointer is set to 0 as opposed to 1 because all of the data in the first statement have not been read. Since the statement pointer starts at 1, statement 9000 sets V\$ equal to A\$. Statements 9010 through 9030 do not affect the program sequence when the statement pointer is at 1. Statement 9040 sets the beginning of a number pointer to the beginning of the current number. Statements 9050 and 9060 check to determine if the end

of a number (statement 9050) or the end of a number at the end of a simulated DATA statement (statement 9060) has been reached. If the end of number has not been reached, statement 9090 increments the data pointer and statement 9100 returns control to statement 9050 to test for the end of a number. If the end of a simulated DATA statement is reached, statement 9070 increments the statement completion counter to 1 and statement 9080 transfers control to statement 9110, the same statement that is encountered whenever the end of a number is detected.

Since the beginning of the current number is CCC and the end is AAA-1, statement 9110 uses the VAL function and slicing features of Sinclair microcomputers to change the portion of the string that represents the number into a numeric variable. Then the data pointer within a statement is incremented in statement 9120. If the end of a simulated DATA statement is reached, statement 9130 resets the statement completion counter (statement 9140), and the data pointer within a statement to 1 (the beginning of a statement). The data statement pointer is incremented in statement 9150.

Statements 9180 through 9200 are the simulated RESTORE subroutine. Statement 9180 sets the data pointer within a statement to the beginning of a statement and statement 9190 resets the statement pointer to the first

simulated DATA statement.

I have written a book entitled Translating Programs into Timex Sinclair BASIC. The book shows methods for extending the simulation routines to include string variables in DATA statements. I have also written a book of statistics programs that uses the simulation routines as part of the data entry procedure. Send to K.D.V.H.E. Publishers (P.O. Box 6788; Chicago, Ill 60680) for a description of "books for Timex Sinclair/1000, ZX81 micro-computers."

John Richard Coffey (P.O. Box 448; Scottsburg, Indiana 47170) has written a machine language program to simulate DATA, READ, and RESTORE statements. The machine language program is available on his Super Tape which also includes many other programs.

There are advantages and disadvantages to simulating DATA, READ, and RESTORE statements with machine language subroutines as opposed to BASIC subroutines using strings. Machine language subroutines take less computer memory and run faster. On the other hand the machine language subroutines require loading the subroutines before a program that uses the subroutines can be run. If a user makes an incorrect call to a machine language subroutine while developing a program, the computer can destroy the program that is being developed.

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# 2068 Reviews by Tex

## CATALOGUE REVIEW By Tex Faucette

Book reviews are quite common. I like to be a bit different, now and then, so I decided to review a catalogue that arrived in my morning mail.

The catalogue I feel is of sufficient interest to the T-S community to warrant such special treatment is the 1985 EDITION 1, published by SOFTWARE SUPERMARKET, 87 Howard's Lane, London, SW15 6NU, England. I might add at this point that Software Supermarket maintains a 24 hour telephone line, 01 789 8546. They will accept plastic money in the form provided by VISA, MASTERCARD, EUROCARD, and ACCESS. Naturally, this is the quickest way to order any of the items listed, and you don't have to worry about the current exchange rate.

SOFTWARE SUPERMARKET stocks software (plus some hardware) for the SPECTRUM, C64, and BBC computers. The catalogue contains 28 letter-size pages plus two order forms in the centerfold. A few of the items listed are already available for the TS 2068 (and the C64) on this side of the pond. With the growing popularity (and availability) of the SPECTRUM ROM, I strongly suspect that we will soon become quite familiar with most of the titles in the catalogue, e.g., Quicksilver, Inc. has already introduced us to the imaginative games and superb graphic displays achieved by British SPECTRUM and C64 programmers.

Campbell Systems MASTERFILE (which I reviewed earlier in the 2068 version) is listed at £19.95, TASWORD 2 at £13.90.

The Kempston SPECTRUM PRINTERFACE, compatible with the above programs and OMNICALC 2, is offered in two versions. They are listed as compatible with all Epsoms, Seikoshas, and a number of other printers. Version "E" contains all operating commands in EPROM, supports Hires graphic screen dumps with Epson and Seikosha printers, and lists at £50.00. Version "S" supplies the software on tape and lists at £35.00.

MINI OFFICE is described as "A sort of miniature version of Lotus 1-2-3....", and contains Word Processor, Database, Spreadsheet, and Graphics at the amazing price of £59.95. (I wonder what Lotus thinks of this?)

Budding programmers are offered New Generations COMPLETE MACHINE CODE TUTOR, which loads in four parts from two cassettes containing over 70K of data. Also available for the C64 and BBC, this program lists at £14.95.

The bulk of the catalog contains enough games to delight any game fan, young or old. What may be a real "sleeper" among the dozens of games listed is one titled "THE QUILL". Quotations from various magazines refer to this program in such terms as, "...a new high-level language", "...write a game as quick and slick as any on the market", "...adventure writers dream". Sounds worthy of a serious investigation!

CURRAH SPEECH, an add-on programmable module, is listed at £29.95, CURRAH SLOT, an add-on "motherboard" at £14.95. I note that CURRAH SPEECH adds talk to THE WAR OF THE WORLDS, which lists for £7.95.

As for the remainder of the game programs, prices range from £5.95 upwards. Considering the strength of the U.S. dollar with respect to the British pound at the time this is written, there are bargains to be had! And SOFTWARE SUPERMARKET sends you a free program (their choice) when you spend \$30.00 or more.

Get the Catalogue!

TSH

Editor's Note: Send \$2.00 postage.

## PRO/FILE 2068 REVISITED By Tex Faucette

The occasion for revisiting Pro/File 2068 is the recent (and long awaited) delivery by Tom Woods (P.O. Box 64, Jefferson, NH 03583) of the final documentation.

While the program was perfectly useable with the temporary instructions supplied, those of us who had been "spoiled" by the excellent documentation supplied with the earlier ZX Pro/File were rather eagerly awaiting something similar to accompany Pro/File 2068 in our software libraries.

Tom Woods did a rather unusual thing during preparation of the Pro/File 2068 manual. He requested input from users to be included in the finished documentation! Thus the finished document contains quite a variety of solid applications of the program. I, for one, would suggest this be done on all serious software, even though there is a definite penalty in terms of development time.

In any case, I am quite willing to concede that the results were worth waiting for.

In accordance with the old Air Force saying to the effect that when the paper work exceeded the weight of the aircraft one was cleared for take-off, Pro/File 2068 should fly. The new manual, dimensioned 7 x 9-1/2

inches, is printed on very good quality paper with a durable and attractive cover. It contains over 140 pages delineating the aforementioned applications, numerous customizing suggestions, and complete annotated listing of the basic and machine codes.

Among the suggested modifications, one will find something as simple as short Basic lines to, for example, supply a bleep when a key is stroked, or re-name a file. One will also find a PRINTER DRIVER to enable full-size printers (including use of imbedded control commands), which may be further customized for either the AERCO or TASMAN Centronics Parallel or the BYTE-BACK RS232 serial interfaces with the data supplied.

Complete instructions for preparing "working copies" of the program are supplied. One

can, and of course should, perform modifications and experiments with these working copies and reserve the original for reference in case of disaster. The unmodified program contains 28000 bytes of open file space for data, and retains 1505 bytes free for additional programming use, which will allow one to do quite a bit of customizing. More programming space is easily obtained if required, but results in a corresponding reduction in the bytes available for data storage.

I need go no further, all of this is thoroughly explained in the manual. Including ZX Pro/File for the TS1000/ZX81, we now have two outstanding Data Base programs for our Timex machines, both accompanied by excellent documentation which other programmers should emulate. TSH

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# T-S NEWS

**ITEM:** Timex Sinclair Survivor Buttons? Display your enthusiasm for low cost computing. The White Church Cabin is selling this three color button, shown actual size below, for \$2.00. Quantity discounts are available. Write 219 White Cabin Road, Brooktondale, New York 14817.



**ITEM:** New Repair Center for Timex. Timex computer's Little Rock repair center has turned over all operations to TS Connection at 3832 Watterson, Cincinnati, Ohio 45227 (513) 271-5575 8 am to 10pm EST. Repair charges are \$15-\$20 for TS1000's and \$35 to \$40 for TS2068's. They also carry all Timex products for sale.

**ITEM:** Memotech keyboard compatible with the TS 2068. Bill Stolker of 21st Century Electronics told us that the Memotech keyboard add-on for the TS1000/ZX81 also works on the TS2068. If you're using your 2068 for word processing the memotech keyboard is more like a typewriter. (The only problem is that it has a "space key" instead of a "space bar.") 21st Century has some in stock. Their address is 6813 Polk Street, Guttenburg, New Jersey 07093.

**ITEM:** The April 85 issue of Home Business News features "Profiles of a Home Publisher" which was written by Rick Duncan, publisher of TS Horizons. It tells the story of how TS Horizons was started and contains several helpful hints for anyone considering home publishing.

Home Business News is a monthly magazine which details how to start and operate a profitable home-based business. A 3 month trial subscription is \$4 from Home Business News, Box 482 L, Jackson, Ohio 45640.

**ITEM:** 2 New Releases from Macshak Software for the TS 2068

**CASINO KENO.** A great party game. Just like the Las Vegas casinos. Players select from 1 to 12 numbers, betting that some of their numbers will be selected by the computer. The computer randomly selects and displays 20 numbers. Winner payoffs are displayed on command.

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Each program \$19.95 plus \$2.00 postage. From Macshak, 73-312 Ironwood Street, Palm Desert, California 92260.

**ITEM:** Back issues of Sync. Sunset Electronics has the last 6 issues of Sync magazine in stock. Sync was a national magazine for TS1000 owners which was cancelled in March 1984. They are available at \$2.95 each (add \$3.00 to total order for shipping) from Sunset, 2254 Taravel Street, San Francisco, California 94116.

**ITEM:** Let's make a deal. We will give you the names and addresses of several companies you can contact to get catalogs chock full of items for use with your computer on one condition: if you write to them say you heard about it through T-S Horizons. Deal?

- E. Arthur Brown (nice selection, nice looking catalog), 3404 Pawnee Drive, Alexandria, MN 56308.

- Knighted Computers (TS 2068 and Spectrum), 707 Highland Street, Fulton, New York 13069.

- Games To Learn By (a lot more than games), P.O. Box 78, Collinsville, CT 06022.

- 21st Century Electronics, 6813 Polk Street, Guttenburg, New Jersey 07093.

- WMJ Data Systems, 4 Butterfly Drive, Hauppauge, New York 11788.

- Hawg Wild, Box 7668, Little Rock, AR 72217.

- Zebra Systems, Inc., 78-06 Jamaica Avenue, Woodhaven, New York 11421.



# T-S NEWS CONTINUED

**CLARIFICATION:** "Doomdark's Revenge" and "Lords of Midnight" (see TS News last issue for information) are available from the English Micro Connection for \$12.95 (plus \$1 postage) each, not for the two. EMC, 15 Kilburn Court, Newport, RI 02840. (401) 849-3805.

**ITEM:** RHEESWARE announces their "TOOLBOX" series of enhancements and programming aids for the TS2068 computer. Each is on cassette and includes complete documentation, instruction, use, and theory.

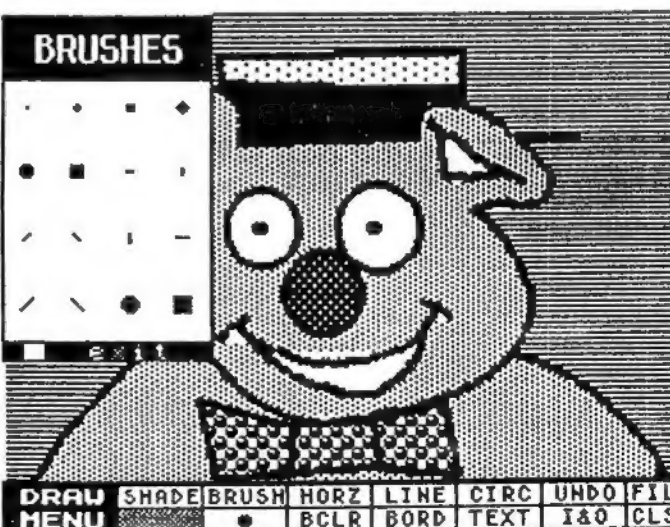
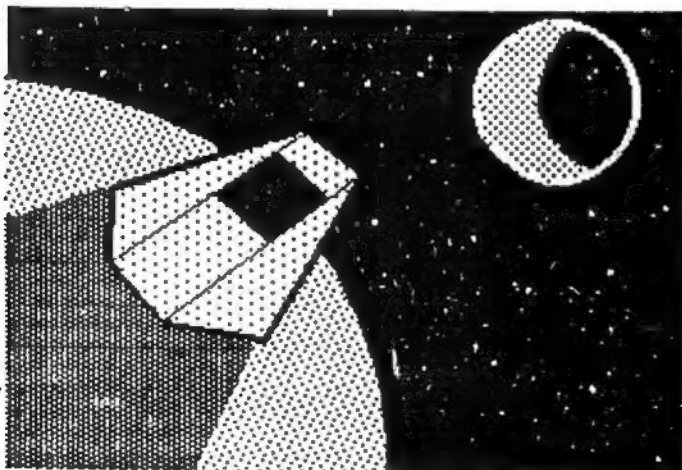
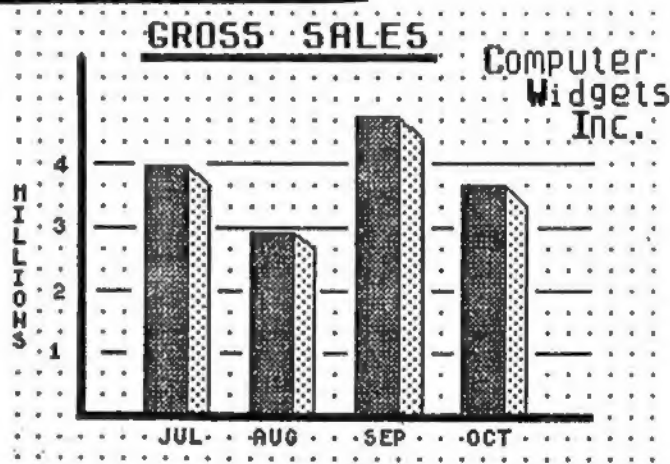
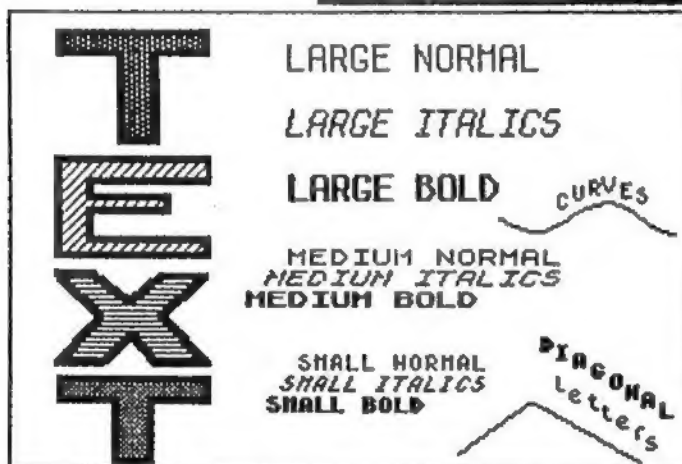
**TOOLBOX 68-A (\$15.95)** is an all machine code "patch" which allows your BASIC or Machine-code programs to use the TS2068 64 column enhanced screen. There are NO "USR" calls, NO Pokes - it operates from the standard PRINT command. All built-in commands such as "PRINT AT", "TAB", "INVERSE",

etc. are fully supported. You can switch back to 32 columns at will. Four operating modes include auto-scrolls and auto-wraparound. PLOT and DRAW commands give you 192 x 512 screen pixels, margins are adjustable, and UP/DOWN scrolls are supported. PLUS, anything can be printed in "Double-Wide" or true italics; and a 64 column wide printout can be made on a TS2040 printer.

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Catalogues available upon request from: RHEESWARE, 1660 S. Duneville, Las Vegas, NV 89102

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